RAD 3-5-11

INSTRUCTION MANUAL

WRIGHT PATTERSON AIR FORCE BASE

SQ. 39

B&K INSTRUMENTS, INC.
Bruel & Kjaer Precision Instruments
111 WEST 164th STREET • CLEVELAND, OHIO 44142
May, 1969

Wright Patterson AFB
Contract No. F 33615-69-R-1298

R&D 3-5-11

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SQ. 39 INSTRUMENT CONSOLE

The SQ. 39 Instrument Console is a dual bay rack cabinet system containing:

1. 1 Input Patch Panel
2. 1 Signal Patch Panel
3. 1 Output Patch Panel
4. 1 2603C Microphone Amplifier
5. 1 1612S1A/C Parallel Filter Set and Extension Filter Set ZS-0146
6. 1 161 Amplitude Distribution Analyzer

INPUT PATCH PANEL

The input patch panel has two rows of 14 BNC bulk head connectors and two transfer connectors. The two rows of 14 BNC's can be wired to any signal source or recording device. Typically, the upper row can be connected to the reproduce electronics of a tape recorder and the lower 14 to the record circuits. The transfer connections marked X & Y allow connections to be made to the signal patch panel without patching across the 2603 amplifier.

SIGNAL PATCH PANEL

The signal patch panel contains the termination of the X-Y transfer connections; nine connectors which connect to the input and outputs of the 161 amplitude distribution analyzer; four connections go to the input filter connections and output of the 2603C microphone amplifier; and two connections to the input and scanned output of the 1612S1A/S filter set.

OUTPUT PATCH PANEL

The output patch panel has 36 connections which bring the individual outputs from the 1/3 octave filters in the 1612S1A/S parallel filter set. Each 1/3 octave filter output is wired through a Darlington impedance matching amplifier in the 1612S1A/S case. These outputs are also connected to the scanning switch inside the 1612S1A/S. The Darlington outputs are capacitively coupled to the scanner from a point approximately 6 V positive with respect to ground. To prevent build up of a DC level after the scanner, all 1/3 octave lines are loaded at the rear of the patch panel with a 24 kΩ resistor.

The 1/3 octave outputs can be routed to the various inputs in the console without degradation; however, the Darlington amplifiers are not stiff enough to drive cables to other equipment. To overcome this problem, four line driving camplifiers capable of 5 mA peak output and having unity gain are built into the rear of the output patch panel. Four input and four output connections are available. Four additional BNC connections are provided for terminating the external equipment connections.

2603C MICROPHONE AMPLIFIER

See 2603 manual enclosed

1612S1A/S PARALLEL FILTER SET

See 1612S1A manual enclosed. The /S reference on the model number refers to the addition of a single turn continuous rotation precision potentiometer which is mechanically coupled to the scanning switch of the filter set. A suggested method of external connection is shown on Drawing C-564. If desired, the X-Y recorder can be made to plot point to point by adding an RC time constant to the X and Y inputs. (The plot of two exponents is a straight line.)

161 AMPLITUDE DISTRIBUTION ANALYZER

See instruction manual enclosed

ADDITION OF OTHER INSTRUMENTS

Blank panels on the front of the console can be removed to accept other instruments. Extra power connections have been provided inside the rack cabinet.

POWER CONNECTIONS

The console operates through a single power connection at the rear of the cabinet. A front panel master switch, pilot lamp and fuse allows all instruments to be turned off by a single control.

R&D 3-5-

B & K

FROM
B & K INSTRUMENTS, INC.
5111 WEST 164th STREET
CLEVELAND, OHIO 44142

TO
TRANSPORTATION OFFICER
ATTN: ASTSS-40
M/F:FX 2826, BLDG 2, AREA "B"
WRIGHT PATTERSON AFB, OHIO 45433

ORDER NO. F33615 69 C 0110

Return Requested

N C.
ments
o 44135

DATE ENTERED 12/30/68

CUSTOMER ORDER F33615 69

INVOICE NO. 41801

age 1 of 2

SOLD TO • ACCOUNTING & FIN
ASD, ATTN: ASCFC
WRIGHT PATTERSON

, AREA "B"
, OHIO 4543

SHIP VIA XXW PREPAY & DO N

F.O.B. SHIPPING POINT

SUBJECT TO TERMS AND CONDITIONS WHICH APPEAR ON OUR ORIGINAL QUOTATION COVERING THE MATERIAL LISTED BELOW.

ITEM	QUANTITY ORDERED	PART NUMBER AND DESCRIPTION	ACCOUNT	QUANTITY SHIPPED	UNIT PRICE	AMOUNT
1	1	Model SQ 39 IP Input Patch Panel (550-300-000)	550		$ 296.00	
2	1	Model 2603C Amplifier (040-302-603) S/N	500		830.00	
3	1	Model SQ 30 SP SIGNAL PATCH PANEL 5 3 (550-R00-000)	550		170.00	
4	1	Model 1612/S1A Parallel Filter Set KS 0003 (020-301-612) S/N	500		3270.00	
5	1	ZS 0146 Extension Filter Set (020-300-146)			350.00	
6	1	SQ 39 PP Output Patch Panel with 4 Unity Gain Amplifier for line driving (550-300-000)	550		1690.00	
7	1	Model 161 Amplitude Density Analyzer (501-300-161) S/N (Continued)	500		3500.00	

ASTERISK "*" INDICATES BACK ORDERED ITEM

TOTAL MATERIAL

WE WILL SHIP ABOVE ORDER ON OR BEFORE — 3/3/69

FREIGHT

METHOD OF SHIPMENT

TAX ——— %

REPRESENTATIVE	PACKAGES	WEIGHT	WAYBILL NO.	DATE SHIPPED	TOTAL INVOICE
ESA					

THE ARTICLES OR THE SERVICES SUPPLIED IN FULFILLMENT OF THIS ORDER WERE MANUFACTURED OR PERFORMED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE FAIR LABOR STANDARDS ACT AS AMENDED.

SHIPPING DEPT. ⟶ BILLING DEPT.

IF BLANK - SAME AS SOLD TO.

ACCOUNTING & FINANCE OFFICER
ASD, ATTN: ASEFC-13
WRIGHT PATTERSON AFB, OHIO 45443

SHIP TO

TRANSPORTATION OFFICER
ATTN: ASTSS-40
W/F: FX 2326, BLDG 2, AREA "B"
WRIGHT PATTERSON AFB, OHIO

RW PREPAY & DO NOT ADD

TERMS: NET 30 DAYS FROM INVOICE DATE F.O.B. SHIPPING POINT

SUBJECT TO TERMS AND CONDITIONS WHICH APPEAR ON OUR ORIGINAL QUOTATION COVERING THE MATERIAL LISTED BELOW.

QUANTITY ORDERED	PART NUMBER AND DESCRIPTION	ACCOUNT	QUANTITY SHIPPED	UNIT PRICE	AMOUNT
1	Model SQ 39 RC Rack Cabinet Enclosure complete with power wiring	550		$ 907.00	
	(550-300-000)				
1	System Assembly and Final Test			435.00	
	(550-300-000)				
	DELIVERY FURNITURE VAN			85.00	

TOTAL MATERIAL

ASTERISK "*" INDICATES BACK ORDERED ITEM

FREIGHT

WE WILL SHIP ABOVE ORDER ON OR BEFORE — 3/3/69

TAX ——— %

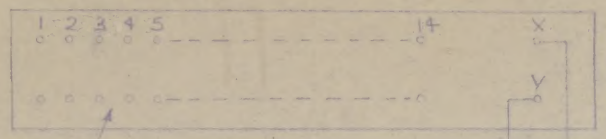
METHOD OF SHIPMENT

TOTAL INVOICE

REPRESENTATIVE	PACKAGES	WEIGHT	WAYBILL NO.	DATE SHIPPED
ESA				

THE ARTICLES OR THE SERVICES SUPPLIED IN FULFILLMENT OF THIS ORDER WERE MANUFACTURED OR PERFORMED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE FAIR LABOR STANDARDS ACT AS AMENDED.

SHIPPING DEPT. ⟹ BILLING DEPT.



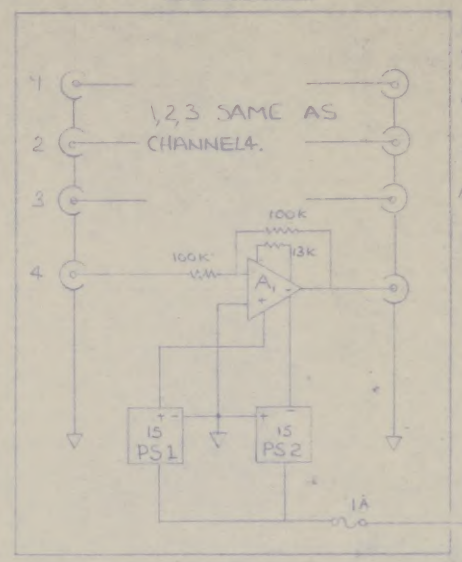
INPUT PANEL

28 BNC BULKHEAD CONNECTORS.
TAPE RECORDER CONNECTIONS MADE INSIDE CABINET

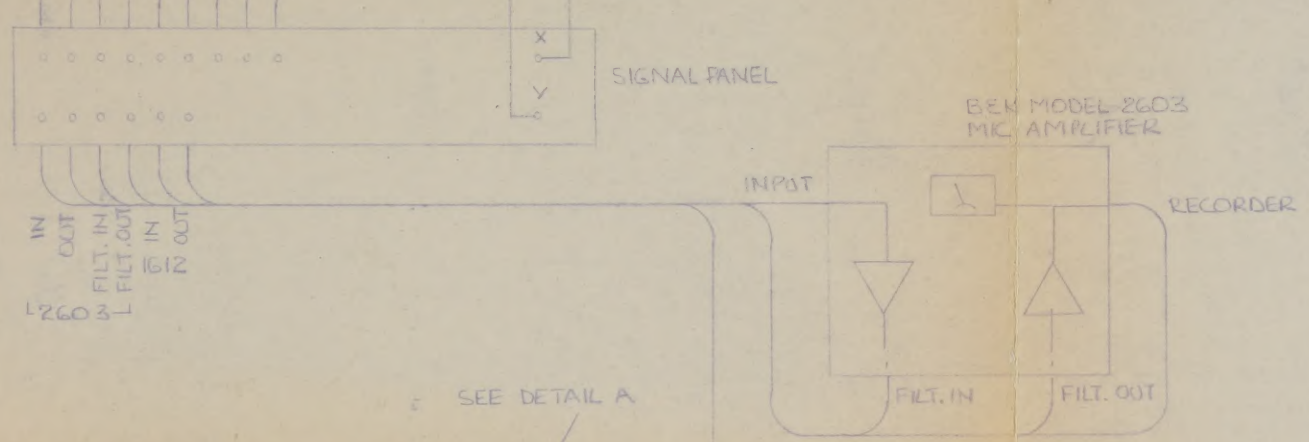
BEK INSTRUMENTS MODEL 161 AMPLITUDE DENSITY ANALYZER.

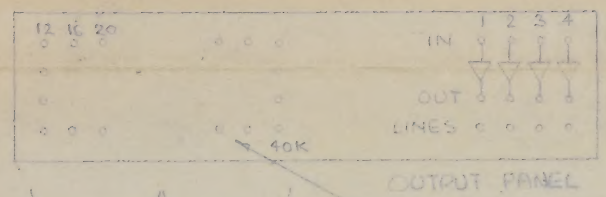
GATE OUT
RATE OUT
PULSE OUT
X OUT
Y OUT
PULSE INPUT
PULSE IN
SYNCH

DETAIL A

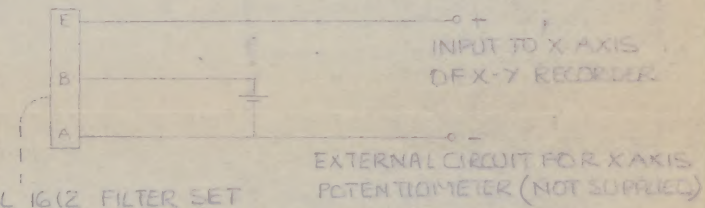


LINE DRIVE AMPLIFIER DETAILS.
A1 ANALOG DEVICES 11 S A
PS1 - PS2 COMPUTER PROD. PM 576
ALL RESISTORS 1/4 WATT

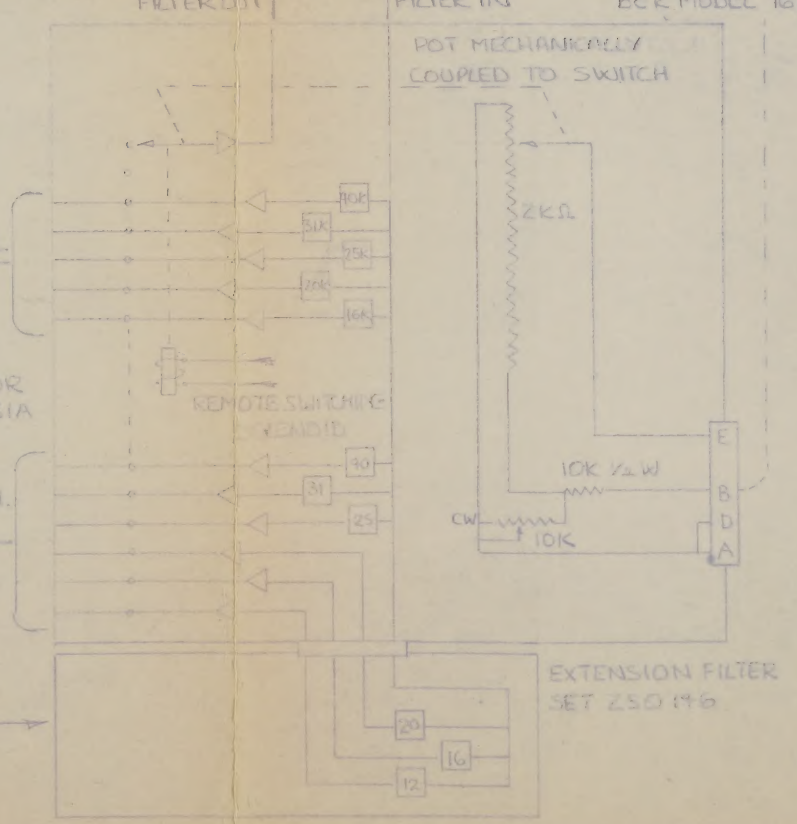




ALL FILTER OUTPUTS LOADED WITH 24KΩ 1/4W



BEK MODEL 1612 FILTER SET



CONNECTOR D1	
FREQ	PIN
12.5	1
16	27
20	3
25	29
31	5
40	31
50	7
63	33
80	9
100	35
125	11
160	37
200	13
250	39
315	15
400	41
500	17
630	43
800	19
1K	45
1.2K	21
1.6K	47

FREQ	PIN
2K	23
2.5K	49
3.1K	25
CONNECTOR D2	
FREQ	PIN
4K	1
5K	3
6.3K	5
8K	7
10K	9
12.5K	11
16K	13
20K	15
25K	17
31K	19
40K	21

REVISIONS

SYM	DESCRIPTION	DATE	APPROVAL

SCALE		NEXT ASSY	
TITLE	RACK CABINET SYSTEM WPAFB. CONTRACT F33615-68-C-1262		S.O.
DRAWN	TBW	DATE 12 Apr 69	
CHECKED		DATE	
APPROVED		DATE	
SIZE	DRAWING NUMBER		ISSUE
D	C564		

B & K INSTRUMENTS, INC.
CLEVELAND, OHIO 44142

SCALE	NEXT ASS'Y	S.O.	
TITLE RACK CABINET SYSTEM WPAFB, CONTRACT NO F33615-69-C-1254			
DRAWN TW DATE 12 APR 69		B & K INSTRUMENTS, INC. CLEVELAND, OHIO 44142	
CHECKED DATE			
APPROVED DATE			
SIZE D	DRAWING NUMBER C564		ISSUE 1

OUT
LINES

40K

OUTPUT PANEL

ALL FILTER OUTPUTS LOADED
WITH 24 KΩ 1/4 W

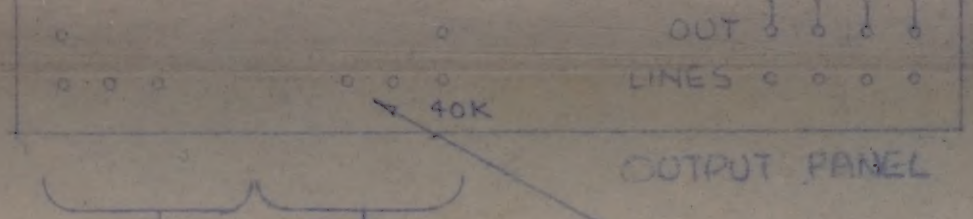
CONNECTOR D2

SEE TABLE ON RIGHT FOR
CONNECTIONS ALSO IG12S1A
INSTRUCTION MANUAL.

CONNECTOR D1

MOUNTED IN
REAR OF CABINET

FILTER



OUTPUT PANEL

ALL FILTER OUTPUTS LOADED
WITH 24K Ω 1/4W

CONNECTOR 02.

SEE TABLE ON RIGHT FOR
CONNECTIONS ALSO 161251A
INSTRUCTIONS MANUAL:

CONNECTOR 01.

MOUNTED IN
REAR OF CABINET

FILTER

RE

SCALE		NEXT ASS'Y
TITLE RACK CABINET SYSTEM WPAFB. CONTRACT F33615-68-R-1		S.O.
DRAWN JW DATE 12 Apr 69	SIZE D	B & K INSTRUMENTS, INC. CLEVELAND, OHIO 44142
CHECKED DATE	DRAWING NUMBER C569	ISSUE 1
APPROVED DATE		